CLAIMS

1. A method for selecting a set of normalizing data points from *n* data sets, where *n* is at least 3, containing data points having values and identities, the method comprising:

receiving *n* data sets;

considering the data points to be distributed in an *n*-dimensional data-point space;

determining one or more order-preserving sequences of data points within the *n*-dimensional data-point space; and

selecting, as normalizing data points, data points from the one or more order-preserving sequences.

2. The method of claim 1 wherein the one or more order-preserving sequences of data points is a single, longest order-preserving sequence of data points.

3. The method of claim 1 wherein the data points within *n* data sets are associated with weights and wherein the one or more order-preserving sequences of data points is an order-preserving sequence of data points with a greatest sum of weights.

4. The method of claim 1 wherein the one or more order-preserving sequences of data points is a longest order-preserving sequence of data points having a shortest Euclidian distance accumulated along a path from an initial data point of the order-preserving sequence to a final data point of the order-preserving sequence.

5. The method of claim 1 wherein the one or more order-preserving sequences of data points are order-preserving sequences of data points of lengths within a threshold value of the length of an order-preserving sequence of data points of maximum length.

6. The method of claim 1 wherein the data points within *n* data sets are associated with weights and wherein the one or more order-preserving sequences of data points are order-

preserving sequences of data points with sums of weights within a threshold value of the sum of weights of an order-preserving sequence of data points with a greatest sum of weights.

7. The method of claim 1 wherein considering the data points to be distributed in an *n*-dimensional data-point space further includes, for each data point, considering the data point to have a value in each of *n*-dimensions, the value of a data-point in an *i*th dimension equal to the value of the data point in an *i*th data set, where $1 \leq i \leq n$.

8. The method of claim 1 wherein determining an order-preserving sequence of data points within the *n*-dimensional data-point space further includes:

for each currently considered dimension,

ordering the data points with respect to the currently considered dimension;

traversing the ordered data points in a first direction, determining a metric corresponding to a maximum subsequence for each data point in the first direction; and

traversing the ordered data points in a second direction, determining a metric corresponding to a maximum subsequence for each data point in the second direction;

summing the determined metrics for each data point in each dimension to produce a metric sum for each data point; and

selecting as belonging to the maximum order-preserving sequence of data points those data points having a greatest metric sum.

9. The method of claim 8 wherein selecting, as normalizing data points, data points from the order-preserving sequence further includes selecting data points with a metric sum greater than a threshold value.

10. The method of claim 8 wherein selecting, as normalizing data points, data points from the one or more order-preserving sequences further includes selecting data points of a single order-preserving sequence.

11. The method of claim 8 wherein selecting, as normalizing data points, data points from the one or more order-preserving sequences further includes selecting data points that most evenly partition the data points into subsets of data points.

12. Computer instructions stored in a computer readable medium that implement the method of claim 1.

13. A data set normalized according to the method of claim 1 stored in a computer readable medium.

14. A system for selecting a set of normalizing data points from n data sets, where n is at least 3, containing data points having values and identities, the system comprising:

a processor;

a memory;

and computer instructions that select the set of normalizing data points from n data sets by

receiving n data sets,

considering the data points to be distributed in an n-dimensional data-point space,

determining one or more order-preserving sequence of data points within the n-dimensional data-point space, and

selecting, as normalizing data points, data points from the one or more order-preserving sequences.

15. The method of claim 14 wherein the one or more order-preserving sequences of data points is a single, longest order-preserving sequence of data points.

16. The method of claim 14 wherein the data points within n data sets are associated with weights and wherein the one or more order-preserving sequences of data points is an order-preserving sequence of data points with a greatest sum of weights.

17. The method of claim 14 wherein the one or more order-preserving sequences of data points is a longest order-preserving sequence of data points having a shortest Euclidian distance accumulated along a path from an initial data point of the order-preserving sequence to a final data point of the order-preserving sequence.

18. The method of claim 14 wherein the one or more order-preserving sequences of data points are order-preserving sequence of data points within a threshold value of an order-preserving sequences of data points of maximum length.

19. The method of claim 14 wherein the one or more order-preserving sequences of data points are order-preserving sequence of data points within a threshold value of an order-preserving sequences of data points with a greatest sum of weights.

20. A method for selecting a set of normalizing data points from n data sets, where n is at least 4 and even, containing data points having values and identities, the method comprising:

receiving n data sets;

considering the data points to be distributed in $\frac{n}{2}$ 2-dimensional data-point spaces;

determining one or more order-preserving sequences of data points for each of the $\frac{n}{2}$ 2-dimensional data-point spaces; and

selecting, as normalizing data points, data points from the order-preserving sequences.

21. The method of claim 20 wherein the one or more order-preserving sequences of data points is a single, longest order-preserving sequence of data points.

22. The method of claim 20 wherein the data points within n data sets are associated with weights and wherein the one or more order-preserving sequences of data points is an order-preserving sequence of data points with a greatest sum of weights.

23. The method of claim 20 wherein the one or more order-preserving sequences of data points is a longest order-preserving sequence of data points having a shortest Euclidian distance accumulated along a path from an initial data point of the order-preserving sequence to a final data point of the order-preserving sequence.

24. The method of claim 20 wherein the one or more order-preserving sequences of data points are order-preserving sequences of data points within a threshold value of an order-preserving sequence of data points of maximum length.

25. The method of claim 20 wherein the data points within *n* data sets are associated with weights and wherein the one or more order-preserving sequences of data points are order-preserving sequences of data points with sums of weights within a threshold value of the sum of weights of an order-preserving sequence of data points with a greatest sum of weights.

26. The method of claim 20 wherein determining an order-preserving sequence of data points within a 2-dimensional data-point space further includes:

for each currently considered dimension,

ordering the data points with respect to the currently considered dimension;

traversing the ordered data points in a first direction, determining a metric corresponding to a maximum subsequence for each data point in the first direction; and

traversing the ordered data points in a second direction, determining a metric corresponding to a maximum subsequence for each data point in the second direction;

summing the determined metrics for each data point in each dimension to produce a metric sum for each data point; and

selecting as belonging to the maximum order-preserving sequence of data points those data points having a greatest metric sum.

27. The method of claim 20 wherein selecting, as normalizing data points, data points from the one or more order-preserving sequences further includes selecting data points which

occur in the one or order-preserving sequences computed for greater than a threshold fraction of the $\frac{n}{2}$ 2-dimensional data-point spaces.

28. Computer instructions stored in a computer readable medium that implement the method of claim 20.

29. A data set normalized according to the method of claim 20 stored in a computer readable medium.